24. (Amended) A recombinant DNA that encodes at least a part of core subunit I of a cytochrome *c* oxidase complex and that conveys cytochrome *c* oxidase activity to the complex when present, the recombinant DNA comprising a polynucleotide sequence that encodes an amino acid sequence that is at least 85% identical to SEQ ID NO: 2.

25. (Amended) A recombinant DNA that encodes at least a part of core subunit II of a cytochrome *c* oxidase complex and that conveys cytochrome *c* oxidase activity to the complex when present, the recombinant DNA comprising SEQ ID NO: 3.

26. (Amended) A recombinant DNA that encodes at least a part of core subunit II of a cytochrome *c* oxidase complex and that conveys cytochrome *c* oxidase activity to the complex when present, the recombinant DNA comprising a polynucleotide sequence that encodes the amino acid sequence of SEQ ID NO: 4.

27. (Amended) A recombinant DNA that encodes at least a part of core subunit II of a cytochrome *c* oxidase complex and that conveys cytochrome *c* oxidase activity to the complex when present, the recombinant DNA comprising a polynucleotide sequence that encodes an amino acid sequence that is at least 85% identical to SEQ ID NO: 4.

28. (Amended) A recombinant DNA that encodes at least a part of core subunit III of a cytochrome *c* oxidase complex and that conveys cytochrome *c* oxidase activity to the complex when present, the recombinant DNA comprising SEQ ID NOs: 5 or 7.

29. (Amended) A recombinant DNA that encodes at least a part of core subunit III of a cytochrome *c* oxidase complex and that conveys cytochrome *c* oxidase activity to the complex when present, the recombinant DNA comprising a polynucleotide sequence that encodes the amino acid sequence of SEQ ID NOs: 6 or 8.

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30. (Amended) A recombinant DNA that encodes at least a part of core subunit III of a cytochrome *c* oxidase complex and that conveys cytochrome *c* oxidase activity to the complex when present, the recombinant DNA comprising a polynucleotide sequence that encodes a polypeptide that is at least 85% identical to SEQ ID NO: 6, or a polynucleotide that encodes a polypeptide that is at least 85% identical to SEQ ID NO: 8.

31. (Amended) An expression vector comprising a recombinant DNA that encodes at least a part of core subunits I, II and III of a cytochrome *c* oxidase complex and that conveys cytochrome *c* oxidase activity to the complex when present, the recombinant DNA comprising a polynucleotide sequence selected from the group consisting of polynucleotide sequences encoding the amino acid sequences of SEQ ID NO: 2, SEQ

ID NO: 4, SEQ ID NO: 6 or SEQ ID NO: 8, wherein the expression vector is suitable for expression in an organism.

32. (Amended) An expression vector comprising a recombinant DNA that encodes at least a part of core subunits I, II and III of a cytochrome *c* oxidase complex and that conveys cytochrome *c* oxidase activity to the complex when present, the recombinant DNA comprising a polynucleotide sequence selected from the group consisting of a polynucleotide encoding a polypeptide that is at least 85% identical to the amino acid sequence of SEQ ID NO: 2, a polynucleotide encoding a polypeptide that is at least 85% identical to the amino acid sequence of SEQ ID NO: 4, a polynucleotide encoding a polypeptide that is at least 85% identical to amino acid sequence of SEQ ID NO: 6, a polynucleotide encoding a polypeptide that is at least 85% identical to the amino acid sequence of SEQ ID NO: 8, and combinations thereof.

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37. (Amended) An expression vector according to claim 34, wherein the bacteria is a biologically and/or taxonomically homogeneous culture of a microorganism having the identifying characteristics of *Gluconobacter oxydans* DSM 4025.

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40. (Amended) A recombinant microorganism comprising at least one recombinant DNA that encodes at least a part of core subunits I, II and III of a cytochrome *c* oxidase complex and that conveys cytochrome *c* oxidase activity to the complex when present,

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the recombinant DNA comprising a polynucleotide sequences selected from the group consisting of a polynucleotide sequence of SEQ ID NO: 1, a polynucleotide sequence that encodes the amino acid sequence of SEQ ID NO: 2, a polynucleotide sequence of SEQ ID NO: 3, a polynucleotide sequence that encodes the amino acid sequence of SEQ ID NO: 4, a polynucleotide sequence of SEQ ID NO: 5, a polynucleotide sequence that encodes the amino acid of SEQ ID NO: 6, a polynucleotide sequence of SEQ ID NO: 7, a polynucleotide sequence that encodes the amino acid sequence of SEQ ID NO: 8, and combinations thereof.

41. (Amended) A recombinant microorganism comprising at least one recombinant DNA that encodes at least a part of core subunits I, II and III of a cytochrome *c* oxidase complex and that conveys cytochrome *c* oxidase activity to the complex when present, the recombinant DNA comprising a polynucleotide sequence selected from the group consisting of a polynucleotide sequence that encodes an amino acid sequence that is at least 85% identical to the amino acid sequence of SEQ ID NO: 2, a polynucleotide sequence that encodes an amino acid sequence that is at least 85% identical to the amino acid sequence of SEQ ID NO: 4, a polynucleotide sequence that encodes an amino acid sequence that is at least 85% identical to the amino acid sequence of SEQ ID NO: 6, a polynucleotide sequence that encodes an amino acid sequence that is at least 85% identical to the amino acid sequence of SEQ ID NO: 8, and combinations thereof.

44. (Amended) A recombinant microorganism according to claim 43, wherein the microorganism is obtained from *Gluconobacter oxydans* DSM 4025.

45. (Amended) A recombinant microorganism according to claim 40, wherein the microorganism is a biologically and/or taxonomically homogeneous culture of a microorganism having the identifying characteristics of *Gluconobacter oxydans* DSM 4025.

a4 46. (Amended) A process for producing a cytochrome *c* oxidase complex comprising:

(a) cultivating in a culture medium a recombinant microorganism comprising at least one recombinant DNA that encodes at least a part of core subunits I, II and III of a cytochrome *c* oxidase complex and that conveys cytochrome *c* oxidase activity to the complex when present, the recombinant DNA comprising polynucleotide sequences selected from the group consisting of SEQ ID NO: 1, a polynucleotide sequence that encodes the amino acid sequence of SEQ ID NO: 2, a polynucleotide sequence that encodes an amino acid sequence that is at least 85% identical to the amino acid sequence of SEQ ID NO: 2, SEQ ID NO: 3, a polynucleotide sequence that encodes the amino acid sequence of SEQ ID NO: 4, a polynucleotide sequence that encodes an amino acid sequence that is at least 85% identical to the amino acid sequence of SEQ ID NO: 4, SEQ ID NO: 5, a polynucleotide sequence that encodes the amino acid of SEQ ID NO: 6, a polynucleotide sequence that encodes an amino acid sequence that is

at least 85% identical to the amino acid sequence of SEQ ID NO: 6, SEQ ID NO: 7, a polynucleotide sequence that encodes the amino acid sequence of SEQ ID NO: 8, a polynucleotide sequence that encodes an amino acid sequence that is at least 85% identical to the amino acid sequence of SEQ ID NO: 8, and combinations thereof; and

(b) recovering cytochrome *c* oxidase from the culture.

Please add the following claims:

57. A recombinant DNA that encodes at least a part of core subunit I of a cytochrome *c* oxidase complex and that conveys cytochrome *c* oxidase activity to the complex when present, the recombinant DNA comprising a polynucleotide sequence that hybridizes to the complementary strand of SEQ ID NO: 1 under high stringency conditions (overnight incubation in 6X SSC, 0.5% SDS, 100 ug/ml denatured salmon sperm DNA, 50% formamide, with gentle rocking at 42°C; followed by a first wash in 2X SSC, 0.5% SDS at room temperature for 15 minutes; followed by a second wash in 0.1X SSC, 0.5% SDS at room temperature for 15 minutes).

58. A recombinant DNA that encodes at least a part of core subunit II of a cytochrome *c* oxidase complex and that conveys cytochrome *c* oxidase activity to the complex when present, the recombinant DNA comprising a polynucleotide sequence that hybridizes to the complementary strand of SEQ ID NO: 3 under high stringency conditions (overnight incubation in 6X SSC, 0.5% SDS, 100 ug/ml denatured salmon sperm DNA, 50% formamide, with gentle rocking at 42°C; followed by a first wash once

in 2X SSC, 0.5% SDS at room temperature for 15 minutes; followed by a second wash in 0.1X SSC, 0.5% SDS at room temperature for 15 minutes).

59. A recombinant DNA that encodes at least a part of core subunit III of a cytochrome *c* oxidase complex and that conveys cytochrome *c* oxidase activity to the complex when present, the recombinant DNA comprising a polynucleotide sequence that hybridizes to the complementary strand of SEQ ID NOs: 5 or 7 under high stringency conditions (overnight incubation in 6X SSC, 0.5% SDS, 100 ug/ml denatured salmon sperm DNA, 50% formamide, with gentle rocking at 42°C; followed by a first wash in 2X SSC, 0.5% SDS at room temperature for 15 minutes; followed by a second wash in 0.1X SSC, 0.5% SDS at room temperature for 15 minutes).

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60. A recombinant DNA according to claim 24, wherein the complex is isolated from a *Gluconobacter oxydans* DSM 4025 microorganism.

61. A recombinant DNA according to claim 24, wherein the complex has the following properties:

It comprises

(a) at least core subunit I (COI) and core subunit II (COII), wherein the apparent molecular masses of COI and COII are about 43 ± 10 kDa and 36 ± 10 kDa, respectively by SDS-PAGE; and

(b) an absorption spectrum showing an *aa*3-type cytochrome *c* oxidase peak at 605 ± 1 nm in a reduced minus oxidized difference spectrum.

62. A recombinant DNA according to claim 24, wherein the complex is a recombinant enzyme.

63. A recombinant DNA according to claim 24, wherein the complex comprises at least one amino acid sequence selected from the group consisting of SEQ ID NO: 4, 6, or 8, and amino acid sequences that are 85% identical to SEQ ID NO: 4, 6 or 8.

64. A recombinant DNA according to claim 27, wherein the complex is isolated from a *Gluconobacter oxydans* DSM 4025 microorganism.

65. A recombinant DNA according to claim 27, wherein the complex has the following properties:

(a) at least core subunit I (COI) and core subunit II (COII), wherein the apparent molecular masses of COI and COII are about 43 ± 10 kDa and 36 ± 10 kDa, respectively by SDS-PAGE; and

(b) an absorption spectrum showing an *aa*3-type cytochrome *c* oxidase peak at 605 ± 1 nm in a reduced minus oxidized difference spectrum.

66. A recombinant DNA according to claim 27, wherein the complex is a recombinant enzyme.

67. A recombinant DNA according to claim 27, wherein the complex comprises at least one amino acid sequence selected from the group consisting of SEQ ID NO: 2 and amino acid sequences that are 85% identical to SEQ ID NO: 2.

68. A recombinant DNA according to claim 30, wherein the complex is isolated from a *Gluconobacter oxydans* DSM 4025 microorganism.

69. A recombinant DNA according to claim 30, wherein the complex has the following properties:

(a) at least core subunit I (COI) and core subunit II (COII), wherein the apparent molecular masses of COI and COII are about 43 ± 10 kDa and 36 ± 10 kDa, respectively by SDS-PAGE; and

(b) providing an absorption spectrum showing an *aa*3-type cytochrome *c* oxidase peak at 605 ± 1 nm in a reduced minus oxidized difference spectrum.

70. A recombinant DNA according to claim 30, wherein the complex is a recombinant enzyme.

71. A recombinant DNA according to claim 30, wherein the complex comprises at least one amino acid sequence selected from the group consisting of SEQ ID NO: 2 and amino acid sequences that are 85% identical to SEQ ID NO: 2.

72. An expression vector according to claim 32, wherein the complex is isolated from a *Gluconobacter oxydans* DSM 4025 microorganism.

73. An expression vector according to claim 32, wherein the complex has the following properties:

(a) at least core subunit I (COI) and core subunit II (COII), wherein the apparent molecular masses of COI and COII are about 43 ± 10 kDa and 36 ± 10 kDa, respectively by SDS-PAGE; and

(b) an absorption spectrum showing an *aa*3-type cytochrome *c* oxidase peak at 605 ± 1 nm in a reduced minus oxidized difference spectrum.

74. An expression vector according to claim 32, wherein the complex is a recombinant enzyme.

75. A recombinant microorganism according to claim 41, wherein the complex is isolated from a *Gluconobacter oxydans* DSM 4025 microorganism.

76. A recombinant microorganism according to claim 41, wherein the complex has the following properties:

(a) at least core subunit I (COI) and core subunit II (COII), wherein the apparent molecular masses of COI and COII are about 43 ± 10 kDa and 36 ± 10 kDa, respectively by SDS-PAGE; and

(b) an absorption spectrum showing an *aa*3-type cytochrome *c* oxidase peak at 605 ± 1 nm in a reduced minus oxidized difference spectrum.

77. A recombinant microorganism according to claim 41, wherein the complex is a recombinant enzyme.

78. A process for producing a cytochrome *c* oxidase complex according to claim 46, wherein the complex is isolated from a *Gluconobacter oxydans* DSM 4025 microorganism.

79. A process for producing a cytochrome *c* oxidase complex according to claim 46, wherein the complex has the following properties:

(a) at least core subunit I (COI) and core subunit II (COII), wherein the apparent molecular masses of COI and COII are about 43 ± 10 kDa and 36 ± 10 kDa, respectively by SDS-PAGE; and

(b) an absorption spectrum showing an aa3-type cytochrome c oxidase peak at 605 ± 1 nm in a reduced minus oxidized difference spectrum.

80. A process for producing a cytochrome c oxidase complex according to claim 46, wherein the complex is a recombinant enzyme.

REMARKS